

# PATENT ABSTRACTS OF JAPAN

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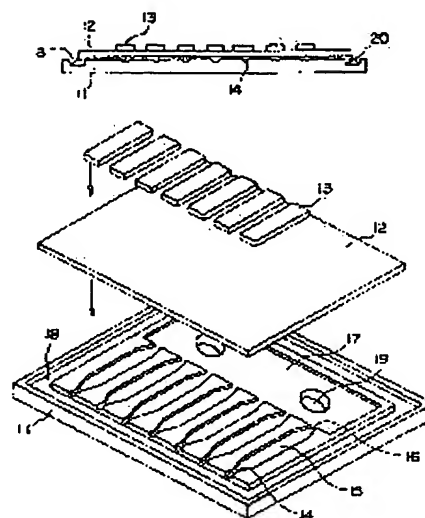
(72)Inventor : SHIMODA JUNJI  
MIZOGUCHI YOSHIYUKI  
YAMAMOTO MAYUMI

## (54) FORMING METHOD FOR RECORDING HEAD OF INK JET RECORDER

### (57)Abstract:

**PURPOSE:** To uniformly adhere a board to a ceiling plate without gap and to eliminate a restriction in materials of the board and the plate by adhering the plate to one side face of the board formed with an adhesive flowing groove on its one side face and an electromechanical converter to the outer face of the plate, and then cutting the edge facing perpendicularly the board and the orifice of the plate until it arrives at the orifice.

**CONSTITUTION:** A board 11 is adhered to a ceiling plate 12, and the plate 12 is adhered to an electromechanical converter 13 with an adhesive. Since the shape of the upper face of the board 11 is fine between the board 11 and the plate 12, the lower face of the plate 12 is thinly and uniformly coated by spin coating with the adhesive 20, and both are then adhered. The converter 13 is adhered to a position corresponding to a pressure chamber 15 formed in the board 11. The adhered board 11 and the plate 12 are cut by cutting or polishing to a chain line A, i.e., until the edge perpendicular to an orifice 14 arrives at the orifice 14, thereby exposing the orifice 14. The rise of the adhesive 20 on the peripheral edge of the plate 12 can be absorbed by the adhesive flowing groove 18 of the peripheral edge of the board 11.



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(A) Relevance to claims

The following is a translation of passages related to claims 1-18 of the present invention.

(B) Translation of the relevant passages

[Embodiments]

The following will describe an embodiment of the present invention with reference to figures.

Fig. 1 shows a substrate 11, a top plate 12, and electromechanical transducers 13. On the top surface of the substrate 11, orifice sections 14 connected to each other, pressure room sections 15, and ink flow paths 16 are provided (the numbers of these members are 7 in the figure, but not limited to this). Also, a common liquid room section 17 which is connected to the ink flow paths 16 is further provided. Along the periphery of the substrate 11, an adhesive inflow groove 18 is formed so as to circumscribe the orifice sections 14, the pressure room sections 15, the ink flow paths 16, and the common liquid

room section 17. The common liquid room section 17 is provided with ink supply openings 19 connected to the outside.

Such a substrate 11 is made up of a stainless plate or a glass plate. The sections such as the orifice sections 14 and the pressure room sections 15 are formed by half-etching or electro-discharge machining when a stainless plate is adopted, or are formed by photo-etching when a glass plate is adopted.

First, the substrate 11 is bonded with the top plate 12 using an adhesive, and the top plate 12 is further bonded with the electromechanical transducers 13 using an adhesive. Since the top surface of the substrate 11, the surface facing the top plate 12, has microscopic irregularity, the adhesive is applied to the bottom surface of the top plate 12 in a thin and uniform manner, and the substrate 11 and the top plate 12 are then bonded with each other. The electromechanical transducers 13 are bonded at positions corresponding to the pressure room sections 15 formed on the substrate 11.

Fig. 2 shows the substrate 11 and the top plate 12 being bonded with each other. The substrate 11 and the top plate 12 are cut along a chain line A in Fig. 2 or ground at the edge orthogonal to the orifice sections 14

until reaching the line A, so that the orifice sections 14 become exposed to the outside as shown in Fig. 3. Fig. 4 is a front view of these exposed orifice sections 14. In this figure, an adhesive 20 applied to the top plate 12 is exaggerated.

The adhesive 20 is applied to the bottom surface of the top plate 12 by a spin coat method. In the immediate aftermath of the application, the adhesive 20 is thin and uniform at the center of the top plate 12 but is ineluctably thick at the periphery. This unevenness is, however, cancelled out by the adhesive inflow groove 18 provided at the periphery of the substrate 11. As a result, the substrate 11 and the top plate 12 are surely bonded with each other by a thin and uniform adhesive layer evenly spreading between the surfaces.